NIBBLE NEWS

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HAPPY THANKSGIVING!

Another series has been added this month!   'Bootstrap' begins this month with the description of DOS 3.3 first and second stage boot.   Several future articles are planned to explain the process of generating your own SECTMODs for disk backup.

We also have the next installment of FUN With the Sector Editor, along with another Patch-Work article on normally non-compatible printer interface cards.

The Auto-Load disks are going out at the same time as the newsletters this month, so you should be receiving yours soon, if you have not already received it.   Included in this issue is a description of how to use the Auto-Load diskette.

Again this month we have had a large number of contributed parameters for which we would like to thank our readers very much. Keep up the good work!

Until next month.....

Randy Ubillos

USING AUTO-LOAD DISKETTES

To use the Auto-Load files stored on the Nibble News disk, refer to Chapter 6 of your NIBBLES AWAY][Manual.

To make the Auto-Loads compatible with all combinations of source and destination drive, some of the Auto-loads on this disk are split into two parts, the first will be saved as the name of the program, the second will have the word 'SECTMOD' after it. The procedure to follow is:

1. Xecute the first Auto-load file as normal.
2. Xecute the second file, but when prompted to insert your disks, insert the DUPLICATE diskette into DRIVE 1, then press a key. This will perform the SECTMOD portion of the backup.

The Nibble News Auto-Load disk contains 4 separate Auto-Load directories. When you look at the disk you will see about 56 entries. This is Auto-Load directory 1. To view the other directories it is necessary to make a GLOBAL modification to NIBBLES AWAY][. This is done by entering the GLOBAL modifier (press 'MG' from the main menu). Then use the byte number from the following table:

```
VERSION-B1................5E67
VERSION-A1................58E1
```

NIBBLES AWAY][will then ask you for a value to enter. The value may be found in the table below:

Desired Directory	Value to enter
1	11
2	10
3	13
4	14

You may change directories as many times as desired by simply entering in a new value in the GLOBAL modifier each time that you wish to use a different directory.

NOTE: When one of these changes has been made, you should reboot NA][before using the Filer for anything other than another parameter from the Nibble News Auto-Load file disk.

PATCH WORK

This month we have some patches for special printer cards: the PKASO NE12 interface card by Interactive Structures, and the Grappler by Orange Micro. Since these patches are a bit long, you will probably want to use the patch listed in the September issue for speeding up Auto-Load files (change Byte 553A from 20 to 2C). This will cause either patch to execute in only 3 or 4 seconds. (This has already been added to the files on this month's Auto-Load disk).

The patches below are to be entered through the NIBBLES AWAY]['GLOBAL' modifier. To make the changes, enter the GLOBAL modifier, and type in each Byte value. You will then be prompted with the current value, which should match the one listed, and a cursor for the new value to be typed in.

PKASO interface board patch
        Byte 701C from C9 to 4C
        Byte 701E from D0 to A5
        Byte 701F from 48 to DB
        Byte 7020 from 06 to 8D
        Byte 7021 from D0 to C8
        Byte 7022 from 16 to C8
        Byte 7023 from AD to 01
        Byte 7024 from C0 to C8
        Byte 7025 from 9F to 01
        Byte 7026 from 0D to 00
        Byte 7027 from C9 to 8D
        Byte 7028 from 48 to 16
        Byte 7029 from 60 to AD
        Byte 702A from 00 to 4C
        Byte 702B from AD to 0C
        Byte 702C from 4C to 0D
        Byte 702D from 0C to C9
        Byte 702E from A5 to 06
        Byte 702F from 65 to D0
        Byte 7034 from 10 to A5
        Byte 7035 from C0 to 65
        Byte 7037 from 0A to 60
        Byte 70D3 from 9E to 90
        Byte 70DC from 02 to 10
        Byte 70DD from 29 to 2A
        Byte 70DF from F0 to EB

Grappler patch
        Byte 7012 from 05 to DB
        Byte 7013 from AD to 4C
        Byte 701D from C1 to A5
        Byte 7025 from 9F to 90
        Byte 70D3 from 9E to 90
        Byte 70DC from 02 to 01

Another handy patch is to be able to turn off the tone generator in NIBBLES AWAY][. This is most usefull in Auto-Loads, since the main time factor becomes the bells in between bytes, or if you don't want your Apple to make a lot of noise late at night.

                Byte C70B from A0 to 60

If you have any ideas for future patches, or info on a printer card which is not currently compatible, let us know so we can publish them!

FUN WITH THE SECTOR EDITOR
By Mike Street

Welcome back to Fun with the Sector Editor. This time we are going to cover a couple of topics. First, the format of each sector in the catalog and second, the format of the Track/Sector lists in which DOS maintains a list of all sectors used to store a particular file.

As we know from the last issue, the disk catalog is on track 11 of each and every DOS 3.3 disk. Sector 0 of this track contains the Volume Table Of Contents which we have discussed in detail. The remaining 15 sectors are used to store the name, length, file type, and basic location information about each file. The location information is actually the location of the first Track/Sector list which we will cover shortly. The catalog sectors are used in decending order meaning that DOS starts placing files in sector 15 of the catalog track and works its way down to sector 1 as more files are placed on the disk.

Each catalog sector can contain seven 'file entries'. Therefore 7 file entries X 15 catalog sectors = 105 files per DOS 3.3 disk. That is of course assuming that the files are all small enough to fit in the 120,000 bytes of useable space on a disk. Each sector of the catalog has the same basic layout which is a follows:

BYTE	PURPOSE
00 --------------	Not Used.
01 --------------	Track number of the next catalog sector.
02 --------------	Sector number of the next catalog sector.
03 - 0A ----------	Not Used.
2E - 50 ----------	First file entry.
51 - 73 ----------	Second file entry.
74 - 96 ----------	Third file entry.
97 - B9 ----------	Fourth file entry.
BA - DC ----------	Sixth file entry.
DD - FF ----------	Seventh file entry.

If the track number and the sector number of the next catalog sector are zero then there are no more sectors in the catalog. Each file entry can be broken down into five more sections. The following table describes each of these sections.

BYTE	PURPOSE
00 --------------	Track number of first Track/Sector list sector.
01 --------------	Sector number of the first Track/Sector list.
02 --------------	File type and 'locked' flag.
03 - 20 ---------	File name.
21 - 22 ---------	File length.

Each of the above could use a little explaining. The first byte normally contains the track number of the first Track/Sector list sector. If the file is deleted then an FF is stored here and the original value is copied to the last byte in the file name area. This fact allows us to un-delete a file by moving the original value back where it belongs. The second byte is the corresponding sector number for the first Track/Sector list sector. The next byte contains two very important pieces of information. It contains both the file type and a 'file locked' flag telling DOS if a file is locked or not. The high bit of the byte is used for this flag. If it is set ('1') then the file is locked, otherwise it is unlocked. There are eight allowable file types including the familiar 'A', 'I', 'B', and 'T' file types. Maybe not so well know is the 'R' or Relocatable file type which is used in the DOS Tool kit by Apple Computer Inc. Currently unused are the 'A', 'B', and the 'S' file types. The following chart shows each file type and the corresponding file type value for both locked an unlocked files. (Remember that all values are hexadecimal.)

LOCKED	UN-LOCKED	FILE TYPE
00	80	Text file.
01	81	Integer basic file.
02	82	Applesoft basic file.
04	84	Binary file.
08	88	'S' type file.
10	90	Relocatable file.
20	A0	'A' type file.
40	C0	'B' type file.

As you can see, the values are only the value of each bit position in the byte. Only one bit (not counting the 'locked' bit) can be set a any one time. The next 30 bytes in the file entry are for the filename. The last two bytes in the file entry contain the length of the file in sectors. The catalog commands uses only the low order byte (0 - 255) when it prints the length but DOS matains the full two byte value (0 - 65,535). There is a small quirk in DOS when it comes to maintaining the length bytes. When a smaller file is saved over a larger file of the same name, the now unused sectors are not marked as being unused. Also the length bytes in the catalog file entry are not updated to reflect the change in file length. An example will help make what happens clear. On a disk with at least 15 free sectors try the following:

    BSAVE GARBAGE,A$0,L$7FF

Then do a catalog. There should now exist a file called 'GARBAGE' on the disk. Now type this:

    BSAVE GARBAGE,A$0,L$10

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What we have done is saved a 10 byte file over the original 2047 byte file. Do a catalog and look at the length byte. No change! Luckly this is only an annoyance and not a big problem. To avoid this problem save the file under a different name or delete the original and then save the file. If you want to see exactly how much space is lost use the FID program on your DOS 3.3 system master disk.

Unlike many operating systems, Apple DOS does not require a block of contigious space to save a file. It will put portions of the file any where on the disk that it finds room. The Track/Sector list sectors provide DOS with a list of all the sectors occupied by a particular file. Each Track/Sector list sector will handle 122 track/sector pairs and can be linked to other Track/Sector list sectors. No matter how small the file it will require at least two sectors. One to hold the Track/Sector list and the other to hold data. The format of the Track/Sector list sector is:

```
        BYTE                    PURPOSE
        ----                    -------
         00  -------------- Not used.
         01  -------------- Track number of the next Track/Sector list.
         02  -------------- Sector number of the next Track/Sector list
        03 - 04 ---------- Not used.
        05 - 06 ---------- Sector offset for the first sector.
        07 - 0B ---------- Not used.
        0C - 0D ---------- Track and sector of the first data sector.
        0E - 0F ---------- Track and sector of the second sector.
        10 - FD ---------- The rest of the track/sector pairs.
        FE - FF ---------- Track and sector of the last data sector in
                                this track/sector list sector.
```

The second and third bytes point to the next track/sector list sector if there is one. The fifth and sixth bytes are the sector offset count for the first sector pointed to by this track/sector list. The sector tells DOS where in the file the data contained by the first sector belongs. In other words, is it the the first chunk of 255 bytes or the second chunk of 255 bytes and so on...

This is it for this time. In the next issue we will start to use what we have learned so far, as well as cover the format of files on the disk.

BOOTSTRAP

In this series of articles, we will be discussing the boot process performed by Apple disks. First we'll look into a fairly standard first and second stage boot, and then in future articles we will cover the various tricks played on some protected software.

The disk boot process begins in the disk controller's P5A prom (P5 for DOS 3.2). The routines in the card read in track 0, sector 0 from the disk into memory at location $800. It then executes this second stage boot, starting at $801. The normal code at this point looks like the following:

```
0801-   A5 27       LDA    $27         Check to see if this is the first time.
0803-   C9 09       CMP    #$09
0805-   D0 18       BNE    $081F       If not, then skip slot setup.
0807-   A5 2B       LDA    $2B         Get slot * 16.
0809-   4A          LSR                Divide by 16 to get true slot number.
080A-   4A          LSR
080B-   4A          LSR
080C-   4A          LSR
080D-   09 C0       ORA    #$C0        Make it $CN.
080F-   85 3F       STA    $3F         Save slot address high order.
0811-   A9 5C       LDA    #$5C        Get low order of read routine.
0813-   85 3E       STA    $3E         Save that too.
0815-   18          CLC
0816-   AD FE 08    LDA    $08FE       Start at the last sector and
0819-   6D FF 08    ADC    $08FF       buffer address.
081C-   8D FE 08    STA    $08FE
081F-   AE FF 08    LDX    $08FF       Get current sector number.
0822-   30 15       BMI    $0839       If less than 0, then done.
0824-   BD 4D 08    LDA    $084D,X     Lookup physical sector number.
0827-   85 3D       STA    $3D         Save for disk controller.
0829-   CE FF 08    DEC    $08FF       Decrement sector number.
082C-   AD FE 08    LDA    $08FE       Memory address for controller card.
082F-   85 27       STA    $27
0831-   CE FE 08    DEC    $08FE       Decrement memory address.
0834-   A6 2B       LDX    $2B         Get slot number and call controller,
0836-   6C 3E 00    JMP    ($003E)     controller jumps back to $801 when done.
0839-   EE FE 08    INC    $08FE       Finished loading, increment memory
083C-   EE FE 08    INC    $08FE       address to point to third stage boot.
083F-   20 89 FE    JSR    $FE89       Set IN#0
0842-   20 93 FE    JSR    $FE93       Set PR#0
0845-   20 2F FB    JSR    $FB2F       Set textmode, full screen window
0848-   A6 2B       LDX    $2B         Get slot number
084A-   6C FD 08    JMP    ($08FD)     Goto third stage boot

084D-   00 0D 0B 09 07 05 03 01        This is the logical to physical sector
0855-   0E 0C 0A 08 06 04 02 00        mapping table.
```

To view this with NIBBLES AWAY II, enter the sector editor, put in a DOS 3.3 master disk, and press 'R' to read in track 0, sector 0. Then move the cursor to the right one space with the 'K' key, and press 'L' to get a disassembly. What you see on the screen will be the first sixteen lines of the above listing. To see more, use the arrow keys to move forward and backward through the listing.

The comments to the right describe the flow of the second stage boot. The basic idea is:

1. Find the address to start loading at by looking $8FE for the high order byte. In most cases $8FE contains a $B6, meaning that the load should start at $B600.
2. Find the number of sectors to load at $8FF. This is usually $09.
3. Read this number of sectors, starting with sector 0, into memory starting at $B600 as found above.
4. Execute the code $100 bytes from the beginning of the load, in this case, $B700.

The code at $B700 contains the routines which load in DOS. This is done by first setting up several parameters, and then calling a routine which reads in a block of data. PR#0 and IN#0 are then set, and DOS is cold started through location $9DBF. The code is normally as follows:

```
B700-   8E E9 B7   STX   $B7E9    This section sets up the slot,
B703-   8E F7 B7   STX   $B7F7    drive, starting sector, starting
B706-   A9 01      LDA   #$01     track and number of sectors to read.
B708-   8D F8 B7   STA   $B7F8
B70B-   8D EA B7   STA   $B7EA
B70E-   AD E0 B7   LDA   $B7E0
B711-   8D E1 B7   STA   $B7E1
B714-   A9 02      LDA   #$02
B716-   8D EC B7   STA   $B7EC
B719-   A9 04      LDA   #$04
B71B-   8D ED B7   STA   $B7ED
B71E-   AC E7 B7   LDY   $B7E7
B721-   88         DEY
B722-   8C F1 B7   STY   $B7F1
B725-   A9 01      LDA   #$01
B727-   8D F4 B7   STA   $B7F4
B72A-   8A         TXA            Put slot number in Accumulator.
B72B-   4A         LSR            Divide by 16 to get true
B72C-   4A         LSR            slot number.
B72D-   4A         LSR
B72E-   4A         LSR
```

```
B72F-   AA           TAX              Transfer slot back to X.
B730-   A9 00        LDA    #$00
B732-   9D F8 04     STA    $04F8,X   Clear drive 1 and 2 track counters to 0.
B735-   9D 78 04     STA    $0478,X
B738-   20 93 B7     JSR    $B793     Call block read (below).
B73B-   A2 FF        LDX    #$FF      Set stack pointer to $FF]
B73D-   9A           TXS
B73E-   8E EB B7     STX    $B7EB     Store slot number.
B741-   20 93 FE     JSR    $FE93     Set PR#0.
B744-   20 89 FE     JSR    $FE89     Set IN#0.
B747-   4C 84 9D     JMP    $9D84     Cold start DOS.


B793-   AD E5 B7     LDA    $B7E5     Get address of IOB.
B796-   AC E4 B7     LDY    $B7E4
B799-   20 B5 B7     JSR    $B7B5     Call RWTS entry (below).
B79C-   AC ED B7     LDY    $B7ED     Get sector number.
B79F-   88           DEY              Decrement it.
B7A0-   10 07        BPL    $B7A9     If not 0, skip around.
B7A2-   A0 0F        LDY    #$0F      Otherwise set count back to $0F.
B7A4-   EA           NOP
B7A5-   EA           NOP
B7A6-   CE EC B7     DEC    $B7EC     Decrement track.
B7A9-   8C ED B7     STY    $B7ED     Store new sector number.
B7AC-   CE F1 B7     DEC    $B7F1     Decrement load address pointer.
B7AF-   CE E1 B7     DEC    $B7E1     Decrement number of sectors to load.
B7B2-   D0 DF        BNE    $B793     If more left, loop back for the rest.
B7B4-   60           RTS              Return to caller.


B7B5-   08           PHP              Save the current status.
B7B6-   78           SEI              Turn off interrupts.
B7B7-   20 00 BD     JSR    $BD00     Call the low level read/write routines.
B7BA-   B0 03        BCS    $B7BF     If error occured, branch down.
B7BC-   28           PLP              Get previous status.
B7BD-   18           CLC              Signal no error.
B7BE-   60           RTS              Return to caller.
B7BF-   28           PLP              Get previous status.
B7C0-   38           SEC              Signal error condition.
B7C1-   60           RTS              Return to caller.
```

Many times the jump to $9D84 at $B747 will be rerouted to a protection routine first (Note: The instruction at location $B741 may be a jump to the $BF page, this is normal for some disks and is simply a patch to zero the language card). If this jump is somewhere within the range of the sectors which were read in, then you can begin to follow them by listing out the designated addresses. Next month we will see some examples of disks which do not follow the normal pattern.

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N O T E: Those parameters which are followed by one or more asterisks (*) have
been contributed by NIBBLES AWAY][users, and have not been tested by
COMPUTER:applications Inc.

```
COMPANY NAME:
PROGRAM NAME       COPY TRACKS    PARAMETERS TO CHANGE
----------------   -----------    --------------------
A d v e n t u r e    I n t e r n a t i o n a l:
Eliminator -------- 0-21..........Addr=D5 AA 96
                       SECTMOD [F=16,C=OFF,T=03,S=0D]
                        Change address 2E from 20 to EA
                        Change address 2F from 30 to EA
                        Change address 30 from 72 to EA
A p p l e   C o m p u t e r:
Visicalc /// ------ 0-22..........SYNC
Apple Writer /// -- 0-22..........SYNC
Apple Logo -------- 0-22..........Addr D5 AA 96
                    1-1...........Addr AA D6 EE
                             NIBBLE COUNT=Y
                               FIND MAX=03
                              SHIFT N+ = 08
                              SHIFT N- = 00
Apple Writer II --- 0-3...........Addr D5 AA DA (or D5 AA DB)
                    4-22..........Addr D5 AA 96
Super Pilot ******* 0-0...........Addr=D5 AA 96
                    2-22
                       SECTMOD [F=16,C=OFF,T=0,S=0A]
                        Change address 79 from 43 to EA
                        Change address 7A from 41 to EA
                        Change address 7B from C6 to EA
A R T S C I   I N C.
Magic Window ****** 0-0...........Addr=FC FF FF
Magic Mailer        1-22..........Addr=D5 AA B5

A u t o m a t e d   S i m u l a t i o n s:
Temple of Apshai ** 0-22..........Addr=D5 AA B5
```

Avante-Garde Creations
Zero Gravity Pinball 0-22..........Addr=D5 AA B5
Hi-Res Golf
Hi-Res Secrets ***** 0-22..........Addr=D5 AA 96

A D O   S O F T W A R E
Super Puckman ****** 0-0..........Addr=D5 AA D5
                    1-E..........Addr=DD AD DA

B P I: (REVISED)
Accounting -------- 0-22..........Addr=D5 AA 96
   System   FIX AMNT=04, GAPBYTE1=C8
                         GLOBAL MOD BYTE D972 from 03 to 00
                    11-11.........Ins=AD FB E6 FF E6
                                   SYNC SIZ=0A
Broderbund Software:
Apple Panic ------- 0-D
Genetic Drift ----- 0-0..........Addr=D5 AA B5
                    1-3..........Addr=BB D5 BB
                    4.5-6 by 1.5
                    7.5-B.5
                    D-D..........Addr=D4 D5 BB
                    E.5-12.5......Addr=AD B5 DE
Space Quarks ------ 0-0..........Addr=D5 AA B5
                    1-2..........Addr=FF DF DE, DATA MAX=25
                    3.5-5.5
                    7-9 by 2
                    A.5-B.5
                    D-15
Space Warrior ----- 0-0..........Addr=D5 AA B5, DATA MAX=30
                    2.5-3.5.......Addr=DF AD DE
                    5-8 by 3
                    6.5-6.5
                    A-10 by 3
Warlords ********** 0-F..........Addr=D5 AA B5

B u d g c o:
Raster Blaster ---- 0-0..........Addr=D5 AA 96, SYNC
                                  DATA MIN=18, DATA MAX=40
                    5-11 by 4......Addr=AD DE, DATA MIN=13, SYNC
                    6-12 by 4......SYNC
                    7.5-F.5 by 4...SYNC
                    1.5-3.5 by 2...SYNC

C A L I F O R N I A   P A C I F I C
Ultima *********** 0-22..........Find Max = 0B

```
Cavalier  Computer:
Microwave --------- 0-22..........Addr=D5 AA 96
                    SECTMOD [F=16,C=ON,T=02,S=01]
                        Change address DA from A9 to AD
                        Change address DB from 60 to 03
                        Change address DC from 8D to 81
                        Change address DD from 7E to 60


Central  Point  Software:
Copy II Plus ****** 0-2...........Normal
                    Del Byte =20
Continental  Software:
Guardian ---------- 0-1...........Addr=D5 AA B5
                    2-11..........Addr=D6 AA B5
                        Ins=DF AA EB F7, SYNC SIZ=0A
Data  Most:
County Fair ------- 0-22..........Addr=D5 AA B5
Snack Attack        SECTMOD [F=13,C=OFF,S=03,T=00]
                        Change address 63 from 38 to 18
Snack Attack ------ 0-22..........Addr=D5 AA B5
(revised)           SECTMOD [F=13,C=off,S=01,T=00]
                        Change address 39 from 38 to 18
Swashbuckler ------ 0-22..........Addr=D5 AA 96
Casino 21           SECTMOD [F=16,C=OFF,S=03,T=00]
                        Change address 42 from 38 to 18
Canyon Climber ---- 0-2...........Addr=D5 AA 96
                    SYNC SIZ=0A, FIX AMNT=04
                    11-17
                    SECTMOD[F=16,C=OFF,T=00,S=01]
                        Change address 48 from 00 to 84
                        Change address 49 from 9B to 9D
Space Kadet ******* 0-22..........Addr=D5 AA 96
Mars cars                         Overide Standardizer
Crazy Mazey
Tax Beater ******** 0-22..........Addr=D5 AA 96
REAP                SECTMOD [F=16,C=OFF,T=0,S=03]
                        Change address 42 from 38 to 18
Money Muncher ***** 0-22..........Addr=D5 AA 96
Tubway
Aztec
```

```
Data  Soft:
Dung Beetles ------ 0-0............Addr=D5 AA B5
                    1-1............Addr=F5 F6 F7
                    4-22
                    SECTMOD [F=13,C=ON,T=00,S=01]
                        Change address 6D from 01 to 7B
                        Change address 6E from 61 to 69

E d u w a r e:
The Prisoner ****** 0-22..........Sync
Algebra I ********* 0-22..........Addr=D5 AA B5
Empire 1 World **** 0-22..........Addr=D5 AA 96
Builders            3-3...........Nibble Count
Prisoner II ******* 0-22..........Addr=D5 AA 96
                    SECTMOD [F=16,C=ON,T=1F,S=0E]
                        Change address D5 from AD to 2F
                        Change address D6 from 99 to AF
                        Change address D7 from F0 to 32


F R O N T I E R   C O M P U T I N G
Adventure ********* 0-22..........Addr=D5 AA 96
(colossal cave)

G e b e l l i   S o f t w a r e:
Firebird ---------- 0-0...........Addr=DD AD DA, SYNC
                    1.5-B.5.......SYNC

H A Y D E N
Sargon II ********* 0-2...........Addr=D5 AA B5
                    4-1A..........Addr=D5 AA F7

H o w a r d s o f t:
Tax Preparer ------ 0-22..........Addr=D5 AA 96

I D S:
Prism Print ******* 0-21..........Addr=D5 AA 96
                            Overide Standardizer
                    SECTMOD [F=16,C=ON,T=21,S=00]
                        Change address 27 from FB to 22
I n f o c o m:
Deadline ---------- 0-22..........Addr=D5 AA 96
StarCross ********* 0-22..........Addr=D5 AA 96


I N F O R M A T I O N   U N L I M I T E D
Easy Writer Pro. ** 0-22..........Addr=D5 AA B5
```

Innovative Design Software:
Pool 1.5 ---------- 0-15.........Addr=D5 AA B5
                1E-21
                  SECTMOD[F=13,C=OFF,T=0B,S=07]
                      Change address 6A from 8D to 60
                  SECTMOD[F=13,C=OFF,T=00,S=03]
                      Change address 63 from 38 to 18
Insoft:
Electric Duet ***** 0-22..........Addr=D5 AA 96
                            Ins= DE AA EB
                            Overide Standardizer
                            Fix Amnt=04 Sync Siz=0A
Int'l Software MKTG
Math Magic ******** 0-22...........Normal

KRELL SOFTWARE
Logo ************** 0-22...........Normal
                  (1B error ok)
              SECTMOD [F=16,C=ON,T=02,S=03]
                  Change Address 5B from D0 to EA
                  Change Address 5C from 03 to EA

LJK Enterprises:
Letter Perfect ---- 0-22..........Addr=D5 AA B5

Learning Company
Bumble Games ****** 0-22..........Addr=D5 AA 96
Bumble Plot   NOTE: Write Protect before booting!
Rocky's Boots
Juggler's Rainbow

Level 10 Software:
Neutrons ---------- 0-22..........Addr=D5 AA 96
Kaves of Karkhan
Rings of saturn *** 0-22...........Addr=D5 AA 96 Sync

Lignting Software:
Master Type ------- 0-2...........Addr=D5 AA B5
                3-22..........Addr=D4 AA B5
                            (Error on $1B OK)
              SECTMOD [F=13,C=OFF,S=03,T=00]
                  Change address 63 from 38 to 18
              SECTMOD [F=13,C=OFF,S=0A,T=02]
                  Change address 2E from 23 to 2E

15

```
Magna  Soft:
Tunnel Terror ----- 0-0...........Addr=D5 AA B5
                    1-12..........Addr=D6 AA B5
                                   Ins=DF AA D7 EB, SYNC SIZ=0A
Micro  Lab:
Peeping Tom ------- 0-0...........Addr=D5 AA B5
                    1-1...........Addr=F5 AB BE
                    4-22
                     SECTMOD [F=13,C=ON,T=00,S=01]
                         Change address 6D from 01 to 7B
                         Change address 6E from 60 to 68
Roach Hotel ------- 0-0...........Addr=D5 AA B5
                    1-1...........Addr=EE EA FE
                    4-22
                     SECTMOD [F=13,C=OFF,T=00,S=01]
                         Change address 75 from 01 to 7B
                         Change address 76 from 61 to 69
VisiFactory ------- 0-22..........Addr=D5 AA 96
                     SECTMOD [F=16,C=OFF,T=00,S=03]
                         Change address 42 from 38 to 18
                     SECTMOD [F=16,C=OFF,T=01,S=00]
                         Change address 84 from 4C to AD
                         Change address 85 from 8E to E9
                         Change address 86 from AE to B7
Invoice Factory --- 0-22..........Addr=D5 AA 96
Jigsaw ************ 0-0...........Normal
                    A-17..........Normal
                    1-9...........Addr=D3 96 F2
Microsoft:
Olympic Decathalon* 0-22..........Addr=D5 AA B5

Mind  Systems  Inc:
AirSim 1 ---------- 0-2...........Addr=D5 AA B5
                    8-F
                    3-7...........Addr=FF FF AB
Mind  Toys:
Jabbertalky ------- 0-22..........Addr=D5 AA 96
Ricochet ---------- 0-22..........Addr=D5 AA 96

M U S E:
Best of MUSE ****** 0-22..........Sync
Three Mile Island
Global War
Know Your Apple *** 0-22..........Addr=D5 AA B5
```

```
Online  Systems:
Cranston Manor ---- 0-22...........ERASE DEST TRACKS
Expediter ][ ------ 0-22...........Addr=D5 AA 96
                                   ERASE DEST TRACKS
Gobbler ----------- 0-22...........Addr=D5 AA B5
                                   ERASE DEST TRACKS
Jaw Breaker ------- 0-22...........Addr=D5 AA B5
                                   ERASE DEST TRACKS
Hires Adv #1 ------ 0-22...........Addr=D5 AA B5
Hires Adv #2 ------ 0-22...........Addr=D5 AA B5
Paddle Graphics --- 0-23...........Addr=D5 AA B5
Hires Soccer ------ 0-22...........Addr=D5 AA B5, SYNC
Thrilogy ---------- 0-22...........Addr=D5 AA B5, SYNC
Hires Cribbage ---- 0-22...........Addr=D5 AA B5, SYNC
Missile Defense --- 0-22...........Addr=D5 AA B5, SYNC
Marauder ---------- 0-22...........Addr=D5 AA 96, Overide Standardizer
                   SECTMOD [F=16,C=ON,T=03,S=07]
                   Change Address 90 from A8 to 60
Pegasus ][ -------- 0-22...........Addr=D5 AA B5
                                   ERASE DEST TRACKS
ScreenWriter ][ --- 0-22...........Addr D5 AA 96
                                          Sync Siz=0A, Fix Amnt=04
                   SECTMOD [F=16,C=ON,T=03,S=0B]
                   Change Address 94 from 20 to EA
                                   95 from 00 to EA
                                   96 from 7F to EA
                   SECTMOD [F=16,C=ON,T=13,S=04]
                   Change Address 4D from 20 to EA
                                   4E from 00 to EA
                                   4F from 60 to EA
Softporn ---------- 0-22...........Addr=D5 AA B5
  Adventure 3.2                    ERASE DEST TRACKS
Softporn ---------- 0-22...........Addr=D5 AA 96
  Adventure 3.3                    ERASE DEST TRACKS
Threshold --------- 0-22...........Addr=D5 AA B5
                                   ERASE DEST TRACKS
Ulysses & --------- 0-22...........Addr=D5 AA 96
  Golden Fleece                    Erase DEST TRACKS
Time Zone  (V1.0)
    Disks A-L ----- 0-22...........Addr=D5 AA 96, 'OVERIDE STANDARDIZER'
  then Disk A ------ SECTMOD [F=16,C=ON,T=03,S=05]
                   Change address 5B from 4C to 60
                   SECTMOD [F=16,C=ON,T=03,S=03]
                   Change address AB from A9 to 60
Cannonball Blitz -- 0-22...........Addr=D5 AA 96
                   SECTMOD [F=16,C=ON,T=17,S=0E]
                   Change address CD from 49 to 60
```

```
Mouskattack ------- 0-22...........Addr=D5 AA 96
                    SECTMOD [F=16,C=ON,T=18,S=03]
                       Change address B1 from 49 to 60
General Manager *** 0-22...........Addr=D5 AA 96
V1.5                   SECTMOD [F=16,C=ON,T=1F,S=0E]
                          Change address C1 from -- to 4B
                          Change address C2 from -- to E0
                          Change address C3 from -- to 49
                       SECTMOD [F=16,C=ON,T=21,S=01]
                          Change address 2E from -- to 60
Sabotage ********** 0-22...........Normal
Alien Rain
Snoggle *********** 0-22...........Addr=D5 AA B5
Time Zone V1.1 **** 0-22...........Addr=D5 AA 96
                       SECTMOD [F=16,C=ON,T=03,S=0B]
                       Change Address F0 from 20 to EA
                       Change Address F1 from 00 to EA
                       Change Address F2 from 17 to EA


O P T I M I Z E D   S Y S T E M S   I N C
Speed Read+ ******* 0-22...........Normal


P e n g u i n   S o f t w a r e:
Pie Man ----------- 0-22...........Addr=D5 AA 96
Spy's Demise ****** 0-22 by 2.....Addr=D5 AA 96
Translvania        1-21 by 2.....Addr=D4 AA 96


P e r s o n a l   B u s i n e s s   S y s t e m s:
Executive --------- 0-22...........Addr=D5 AA 96
     Secretary


P h o e n i x   S o f t w a r e:
Zoom Grafix ------- 0-0............Addr=D5 AA 96, Ins=DD AA ED B5
                                     Sync Siz=0A
                   1-22...........Addr=D4 AA 96
Zoom Graphics ***** 0-22 by 2.....Addr=D5 AA 96
2nd Edition                       Ins=DD AA ED B5
                   1-21 by 2.....Addr=D4 AA 96
                   N O T E: Write Protect before booting!!
Adventure In Time * 0-C...........Normal
Birth of the ****** 0-9...........Normal
     Phoenix


P i c a d i l l y   S o f t w a r e:
Suicide ----------- 0-0............Addr=D5 AA B5
                   11.5-22 by 1.5.Addr=DF AD DE
```

```
Star Blaster ------ 0-0............Addr=D5 AA 96
                    7-20 by 1.5....Addr=DF AD DE
Falcons ########### 0-0............Addr=D5 AA B5
                    1.5-4.5x1.5....Addr DF AD DE
                    5.5-5.5x1
                    7-Ax1
                    B.5-E.5x1.5
                    10-12x1
                    13.5-14.5x1
                    16-19x1.5
                    1A-1B.5x1.5
```

P r o f e s s i o n a l   S o f t w a r e   T e c h n o l o g y:

```
Executive --------- 0-22..........Addr=D5 AA 96, Overide Standardizer
  Briefing System   SECTMOD [F=16,C=ON,T=21,S=00]
                    Change Address 27 from FB to 22
```

R i v e r b a n k   S o f t w a r e

```
International ----- 0-C............Addr=FF FF FF AA
Grand Prix
```

S e n s i b l e   S o f t w a r e:

```
Image Printer ##### 0-2............Addr=D5 AA 96
                    3-7............Addr=F7 AA 96
                    9-22
                    SECTMOD [F=16,C=OFF,T=0,S=03]
                       Change address 42 from 38 to 18
                    SECTMOD [F=16,C=OFF,T=2,S=03]
                       Change address 2A from 2C to 4C
                       Change address 2B from 06 to 5D
                       Change address 2C from B7 to B4
Super Disk Copy ### 0-22..........Addr=D5 AA 96
(Version 3.7)                      Errors OK
The Bug ########### 0-0...........Normal
                    15-15.........Gap Byte 2=FF
                                  Gap Size=10
                    16.5-16.5
```

S e n t i e n t   S o f t w a r e

```
Gold Rush --------- 0-22..........Addr=D5 AA 96
```

S i l i c o n   V a l l e y   S o f t w a r e:

```
Word Handler II --- 0-0............Addr=D5 AA 96
                    11-22
                    1-C............Addr=FF DF DE
Word Handler II ### 0-0C..........Addr=FF DF DE
                    11-22.........Addr=D5 AA 96
```

```
S i r i u s   S o f t w a r e:
Autobahn ---------- 0-0............SYNC
                    4-6............SYNC
                    9.5-C.5........SYNC
Beer Run, Epoch --- 0-0............Addr=DD AD DA, DATA MAX=25, SYNC
Copts & Robbers,    1.5-13.5.......SYNC
Hadron, Snake Byte
NOTE: Errors  will begin to occur somewhere between track C.5 and track  13.5,
      depending on the particular disk.  This is normal.
Escape From ******* 0-2............Addr=D5 AA 96
Rugistein           3-21...........Addr=D5 AA F7
                    22-22..........Datamover
Gorgon ------------ 0-0............Addr=DD AD DA, DATA MAX=25, SYNC
                    1.5-C.5........SYNC
                    E.5-E.5........SYNC
                    D.5-D.5........Addr=D5 AA B5, SYNC
Sneakers ---------- 0-0............Addr=DD AD DA, SYNC
                    1.5-C.5........SYNC
                    D.5-D.5........Addr=D5 AA B5, SYNC
Gamma Goblins ----- 0-0............Addr=DD AD DA, SYNC
                    1.5-B.5........SYNC
                    D-D............Addr=FF FF FF D5 AA EE
                                   DATA MAX=30
Orbitron ---------- 0-0............Addr=DD AD DA, DATA MAX=25, SYNC
                    1.5-E.5........SYNC
                    F.5-F.5........Addr=FF B5 D5 AA
Outpost ----------- 0-0............Addr=DD AD DA, SYNC
                    1.5-9.5........SYNC
                    B.5-B.5........Addr=D5 AA AD, DATA MAX=25
Pulsar ][ --------- 0-C
                    13-19
                    1A.5-1D.5
Dark Forest ------- 0-0............Addr=DD AD DA, SYNC
                    1-22...........Addr=D5 AA A5, SYNC
                         (Errors on 6-8 and last few tracks OK)
Twerps ------------ 0-0............Addr=DD AD DA, SYNC
                    1.5-E.5........SYNC
                    1A-1A
Borg -------------- 0-0............Addr=DD AD DA, SYNC
                    1.5-B.5........SYNC
                    D-20...........SYNC
Wayout ------------ 0-1C...........Addr=AD DA DD
                    22-22..........Addr=AA D5 D5 FF D6 FF FD
                    21-21..........Addr=AA,  USE NIBBLE COUNT
                                   SYNC SIZ=0A, MATCH NM=06
```

```
Kabul Spy ********* 0-21..........Addr=D5 AA 96
  (both sides)            SECTMOD [F=16,C=OFF,T=0,S=0
                          Change address 49 from 20 to EA
                          Change address 4A from 03 to EA
                          Change address 4B from 20 to EA
Kabul Spy ********* 0-0...........Addr=D5 AA 96
  (Side 1)               1-21..........Addr D5 AA F7
                         22-22.........Addr=AA D5 D5 BD BD
                          SECTMOD [F=16,C=OFF,T=0,S=0
                          Change address 49 from 20 to EA
                          Change address 4A from 03 to EA
                          Change address 4B from 20 to EA
   (Side 2)********** 0-21..........Addr=D5 AA F7
Dark Forest ******* 0-22..........Addr=D5 AA B5
                                  Overide Glitch detect
S o f t a p e:
Photar ------------ 0-22..........Addr=D5 AA 96
Draw Poker -------- 0-22..........Addr=D5 AA B5


S o f t w a r e   P u b l i s h i n g   C o r p
PFS/PFS Report **** 0-13..........Addr=D5 AA 96
                                  Overide Standardizer
                                  Gap Byte 1=C0, Gap Byte 2=D0
                                  Filter=C0-C8 (no inverse)
                          N O T E: Write Protect before booting!!
PFS Graph ********* 0-22..........Addr=D5 AA 96
                                  Overide Standardizer
                                  Gap Byte 1=C0, Gap Byte 2=D0
                                  Filter=C0-C8 (no inverse)


S p e c i a l   D e l i v e r y   S o f t w a r e:
Personal ---------- 0-22..........Addr=D5 AA 96
  Finance Manager
Utopia Graphics *** 0-22..........Addr=D5 AA 96
System                            Turn on 3.3 filter
                          SECTMOD [F=16,C=ON,T=0,S=0]
                          Change address 42 from 38 to 18
Galactic Wars ***** 0-22..........Addr=D5 AA 96
Bridge Tutor


S t o n e w a r e:
DB Master (old) --- 0-5...........Addr=D5 AA 96
                    6.5-22.5
DB Master (new) --- 0-5...........Addr=D5 AA 96, SYNC
                    6.5-22.5
D B Master ******** 0-5...........Addr=D5 AA 96, Sync
    Utility pac #1  6.5-22.5.......Sync
```

```
Strategic Simulations:
Cartels & --------- 0-0...........Addr=D5 AA B5
  Cuthroats          2-22..........Addr=DB D5 DE
Operation            1-1..........Addr=D5 AA DA FF
  Apocalypse
Cartels & ********* 0-0...........Addr=D5 AA 96
  Cuthroats V1.1     1-22..........Addr=D4 AA B7
Torpedo Fire ------ 0-22..........Addr=D4 AA B7
Southern Command
Battle of Shiloh ** 0-22..........Addr=D4 AA B7
Warp Factor
Computer Air ****** 0-22..........Addr=D4 AA B7
Combat
S.Hoot E.M. ******* 0-22..........Addr=D4 AA B7
U.P.I.N.S.PACE
S.E.I.U.S.


Sublogic:
FS-1 -------------- 0-0
                    1.5-21 by 1.5..Addr=DB AB BF
                                    REDUCED ERROR CHECK
                    7-8...........REDUCED ERROR CHECK
                    9.5-9.5.......REDUCED ERROR CHECK
Saturn Navigator -- B-22..........Addr=D5 AA FD, FIND MAX=08
                      (Errors on $11 and $17 OK)
                    6.5-6.5.......FF FF D5 AA, FIND MAX=0C
                    0-4...........Addr=D5 AA B5
                    11-11
Escape ------------ 0-22..........Addr=D5 AA 96
A2-PB1 Pinball ---- 0-0...........Addr=D5 AA 96, DATA MAX=25
                    1-15..........Addr=DB AB BF


Synergistic Software:
Escape from ------- 0-22..........Addr=D5 AA 96, 'OVERIDE STANDARDIZER'
   Arcturus                       'OVERIDE NIBBLE FILTER'
Apventure to ****** 0-22..........Addr=D5 AA 96
Atlantis                          'Overide Standardizer'
                                  'Overide Nibble Filter'
U-Boat Command **** 0-22..........Addr=D5 AA 96
                                  'Overide Standardizer'
Sytonic Software:
Interlude ----------0-22..........Addr=D5 AA B5


Turnkey Software:
Ceiling Zero ------ 0-2...........Addr=D5 AA B5
                    3-11..........Addr=D6 AA B5
                                  Ins=DE AA EB F9, SYNC SIZ=0A
```

```
U N I T E D   S O F T W A R E
Supergraphics ***** 0-23..........Addr=D5 AA 96


U S A   S o f t w a r e:
Apple World ------- 0-23
Star Dance -------- 0-22..........Addr=D5 AA B5


V I D E X   C O R P
Pre-Boot System --- 0-22..........Addr=D5 AA 96


V i s i c o r p:
Visicalc 3.3 ------ 0-0...........Addr=D5 AA 96
                    2-22..........Addr=D5 AA B5
                         (Errors toward end OK)
Visicalc III ****** 0-22..........Addr=D5 AA 96  Sync
Advanced (loader)
Advanced(program)** 0-22..........Addr=D5 AA 96, Ins=DE AA EB
                                  Sync Siz=0A, Fix Amnt=04
Visidex ----------- 0-22..........Addr=D5 AA 96, Ins=DE AA EB FD
                                  SYNC SIZ=0A, FIX AMNT=04
Visiterm ---------- 0-22..........Addr=D5 AA 96, Ins=DE AA EB FC
                                  SYNC SIZ=0A, FIX AMNT=04
Visitrend --------- 0-22..........Addr=D5 AA 96, Ins=DE AA EB
  /Visiplot                       SYNC SIZ=0A, FIX AMNT=04
Desktop Plan II --- 0-22..........Addr=D5 AA 96, Ins=AA EB FD
                                  SYNC SIZ=0A, FIX AMNT=04
Visifile ---------- 0-22..........Addr=D5 AA 96, Ins=DE AA EB
                                  SYNC SIZ=0A, FIX AMNT=04
Visischedule------- 0-22..........Addr=D5 AA 96, Ins=DE AA EB EC
                                  SYNC SIZ=0A, FIX AMNT=04
X P S   S o f t w a r e:
Apple Cillin------- 0-D...........Addr=D5 AA 96
Apple Cillin ****** 0-0...........Addr=D5 AA 96
                    1-22..........Addr=D5 AA B5
                    11-11.........Addr=D5 AA 96
```

presents

AUTOMATED BUILDING DIRECTORY SYSTEM

With Direct Telephone Dialing

Installed in a secure cabinet in the lobby of a large office building, this system provides a complete Tenent/Personal listing, along with direct Auto-Dial telephone service to any occupant listed. Emergency Numbers may also be listed under seperate catagories to Page: Security, Maint, Manager, and etc.

This unique directory system eliminates the need for the public to personally visit an office, by providing telephone service from the main lobby. Building traffic is effectively reduced, with increased security and effiency.

SIMPLE KEYPAD OPERATION....The entire system is easily operated by remote keypad containing single keystroke operations The computer hardware is stored, out of sight.

AUTO-DIALING TELEPHONE.....Telephone access to any listed personal is completly automated by the computer. Selected persons are displayed on screen and dialed by the computer.

MULTI-LANGUAGE SUPPORTED...Users may select multiple languages, with all screen prompts, and data appearing in the respective language. (Eng. Spanish French etc)

BUILDING SECURITY.........Utilizing a computerized Telephone/Directory system, Building Security can be achieved by requiring the public to identify before access to the building is given.

EFFECTIVE ERROR RECOVERY...With any public access, electronic device, the need for effective error recovery is enhanced. This system will prompt the user to: Pick/Hang up the phone, and display pre-dial verification of person being called. A time out feature has been incorporated to return the system to its starting point if left unattended during use..

MULTIPLE TERMINALS........Using the CORVUS Hard disk, multiple terminals may be incorporated for the larger size office building, providing instant access to the public directory system.

FLEXIBLE EDITING..........Adding, deleting, or changing information in the system is accomplished by a menu driven editing system providing fast data entry.

FAST DATA ACCESS..........Requested tenent information is displayed on screen quickly, to maximize effiency.

CUSTOM GRAPHIC SCREEN......If desired, your corporate logo is displayed on the computer screen at all times when the system is in an idle condition; identifying the building host Corporation.

Using the Nibble News Parameter Disk

To use the Auto-Load files stored on the
Nibble News disk, refer to Chapter 6 of your
NIBBLES AWAY][Manual.

Some of the Auto-loads on this disk are split
into two parts, the first will be saved as the
name of the program, the second will have the word
'SECTMOD' after it. The procedure to follow is:
1. Xecute the first Auto-load file as normal.
2. Xecute the second file, but when prompted to
   insert your disks, insert the DUPLICATE
   diskette into DRIVE 1, then press a key.
   This will perform the SECTMOD portion of the
   backup.

The Nibble News Auto-Load disk contains 4
separate Auto-Load directories. When you look at
the disk you will see about 56 entries. This is
Auto-Load directory 1. To view the other
directories it is necessary to make a GLOBAL
modification to NIBBLES AWAY][. This is done by
entering the GLOBAL modifier (press 'MG' from the
main menu). Then use the byte number from the
following table:

           VERSION-B1.................5E67
           VERSION-A1.................58E1

NA][will then ask you for a value to enter.
The value may be found in the table below:

Desired Directory	Value to enter
1	11
2	10
3	13
4	14

NOTE: When one of these changes has been made, you
      should reboot NA][before using the Filer
      for anything other than another parameter
      from the Nibble News Auto-Load file disk.

presenting the

COMPUTERIZED PAGING SYSTEM

The 'COMPUTERIZED PAGING SYSTEM' provides the means to selectively notify customers or employees that their attention is required. Television stations positioned throughout the place of business display a sequence of numbers indicating the persons being paged.

FULL COLOR.........Using the many different colors provided by the VIC-20 Computer, a pleasant balance is achieved for ease of viewing.

VIDEO MARQUEE.......A 'Video Marquee' is provided at the bottom of the screen to display any or all of SIX user entered messages.

UNIQUE DISPLAY......Selected numbers are flashed Full Screen Size and then placed on screen with an animated Custom Logo. 16 two digit numbers may be stored on the system at one time.

EASE OF USE.........NO special computer knowledge is required to operate the system. Paging is initiated by a remote keypad independent of other functions

HI-RES GRAPHICS.....Ultra smooth high resolution graphics, are used throughout the system to separate our system from the competition.

CUSTOM LOGO.........If desired, a Custom Logo can be developed free of charge to 'animate' the prompted number.

BATTERY BACKUP......Provides uninterupted computer operation in the event of a power outage. NO DATA LOSS!!!

SYSTEM BACKUP.......An additional custom cartridge may be purchased at a nominal fee, providing additional backup.

WARRANTY INFO.......90 days parts and labor

The above system, primarlly used in restaurant applications, includes the VIC-20 computer, wired entry keypad, and a custom built cartridge.

Please contact COMPUTER:applications, Inc. for additional information.